



SNOHOMISH COUNTY PUBLIC WORKS

March 2015



ADA MEASURING GUIDELINES

Measuring and documenting the dimensions and elements of pedestrian facilities located in the public right-of-way



Title VI and Americans with Disabilities Act (ADA) Information: It is Snohomish County's policy to assure that no person shall on the grounds of race, color, national origin, or sex as provided by Title VI of the Civil Rights Act of 1964, as amended, be excluded from participation in, be denied the benefits of, or otherwise be discriminated against under any County sponsored program or activity. For questions regarding Snohomish County Public Works' Title VI Program, or for interpreter or translation services for non-English speakers, or otherwise making materials available in an alternate format, contact the Department Title VI Coordinator via e-mail at spw-titlevi@snoco.org or phone 425-388-6660. Hearing/speech impaired may call 711.

Información sobre el Título VI y sobre la Ley de Americanos con Discapacidades (ADA por sus siglas en inglés): Es la política del Condado de Snohomish asegurar que ninguna persona sea excluida de participar, se le nieguen beneficios o se le discrimine de alguna otra manera en cualquier programa o actividad patrocinada por el Condado de Snohomish en razón de raza, color, país de origen o género, conforme al Título VI de la Enmienda a la Ley de Derechos Civiles de 1964. Comuníquese con el Department Title VI Coordinator (Coordinador del Título VI del Departamento) al correo electrónico spw-titlevi@snoco.org, o al teléfono 425-388-6660 si tiene preguntas referentes al Snohomish County Public Works' Title VI Program (Programa del Título VI de Obras Públicas del Condado de Snohomish), o para servicios de interpretación o traducción para los no angloparlantes, o para pedir que los materiales se hagan disponibles en un formato alternativo. Los que tienen necesidades comunicativas especiales pueden llamar al 711.

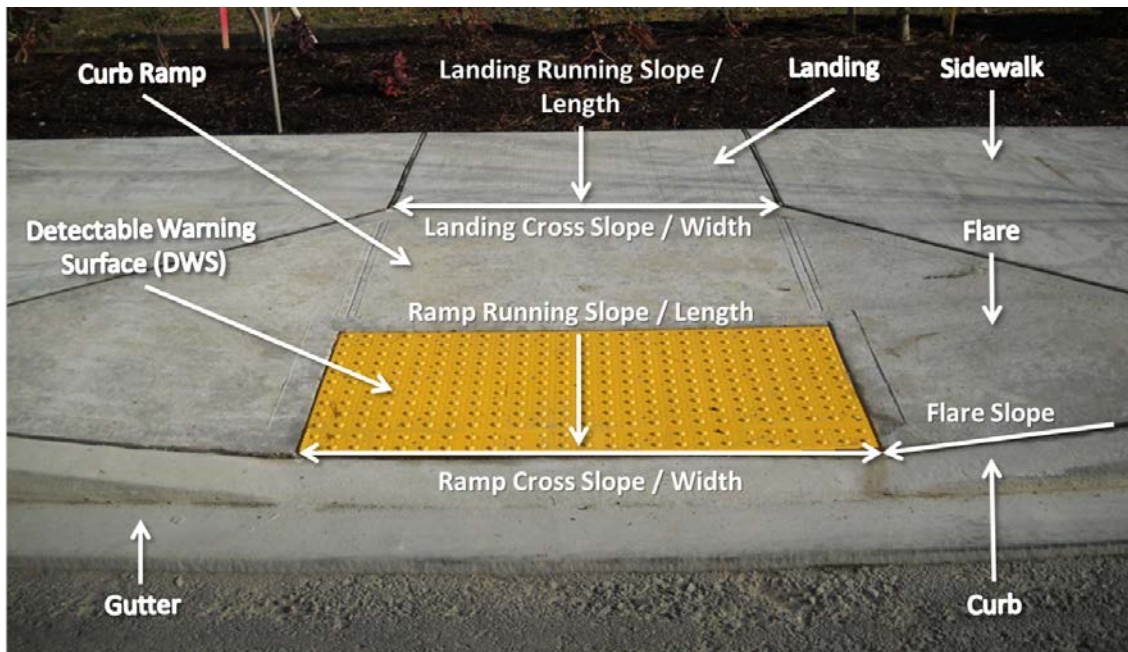
General Notes

- 1 The purpose of the ADA Measuring Guidelines is to provide consistent guidance to engineers, contractors, and inspectors about how the County measures pedestrian facilities so that they can be evaluated for compliance with ADA standards. There will occasionally be exceptions to the guidance that are dependent upon field conditions. The ADA Measuring Guidelines are not meant to provide examples and illustrations for every conceivable field configuration of pedestrian facilities that may be located in the public right-of-way, nor do the ADA Measuring Guidelines cover every ADA standard that may be evaluated. Engineers, contractors, and inspectors who design and evaluate pedestrian facilities in the County right-of-way are responsible for understanding and complying with all County, State, and Federal equal access laws, including the ADA.
- 2 Snohomish County uses a digital inclinometer (Smart Tool) manufactured by MD Building Products to evaluate and measure the slopes of pedestrian facilities located in the public right-of-way for compliance with ADA standards. MD Building Products guarantees the accuracy of its Smart Tool to 0.35% for angles between plumb and level. The Smart Tools are field calibrated according to the manufacturer's recommendations and each calibration is recorded in a log book. Slope measurements are recorded to the nearest tenth of a percent.
- 3 A metal measuring tape should be used to measure linear dimensions and should be capable of measuring in tenths of hundredths of a foot. Linear dimensions are recorded to the nearest tenth of a foot unless otherwise noted in the guidelines.
- 4 Pedestrian facilities that cannot be altered to fully comply with ADA standards shall be altered to the maximum extent feasible (MEF) as indicated in documentation stamped and signed by a Professional Engineer licensed to practice in the State of Washington. All MEF designs and documentation require the review and approval of the County Traffic Engineer, or his/her designee. For more information about the MEF Design Review process and to obtain a copy of the MEF Design Review Application please visit www.snohomishcountywa.gov/pwADA, or call (425) 388-6438.
- 5 The ADA Measuring Guidelines document is a dynamic document and is expected to change and be updated as ADA standards change and/or additional guidance is provided. To comment or recommend changes to the ADA Measuring Guidelines email Contact.pwADA@snoco.org, or call (425) 388-6438.

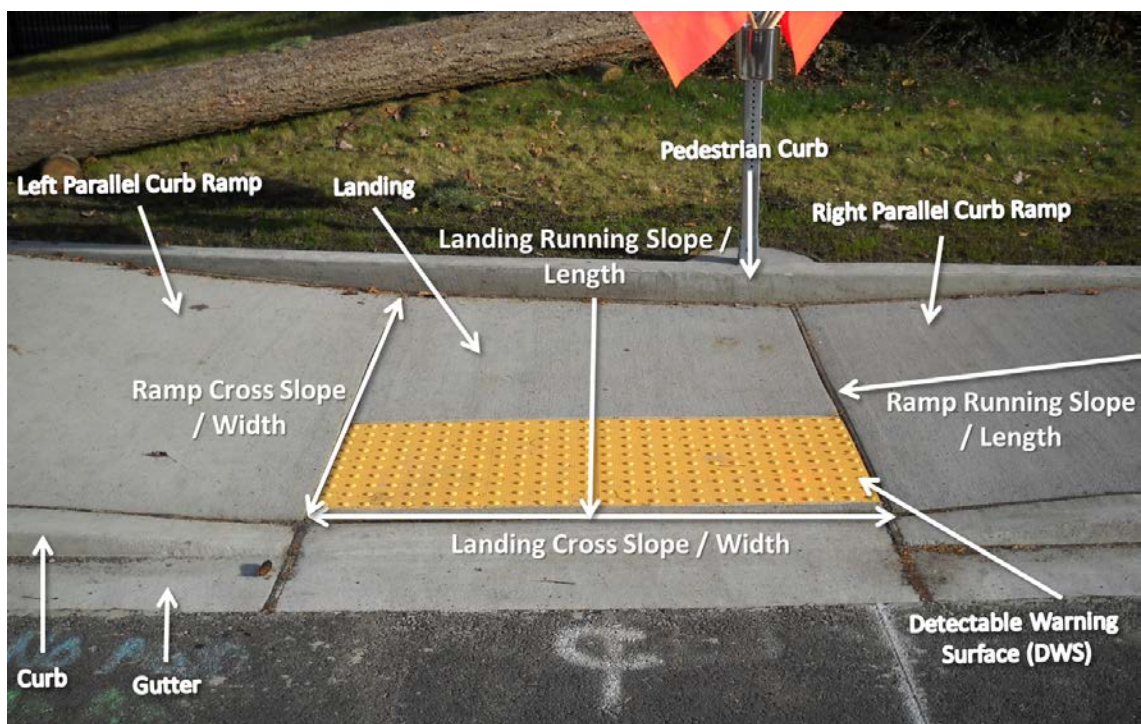
Table of Contents

	Pictorial Illustration of Curb Ramp Elements.....	3
	Example of the Curb Ramp Measurement Form	4
A	Background Information.....	5
B1	Perpendicular Curb Ramps – Landing Slopes & Sizes.....	6
B2	Perpendicular Curb Ramps – Ramp Cross Slopes & Widths.....	7
B2	Perpendicular Curb Ramps – Ramp Run Slopes & Lengths.....	8
B3	Perpendicular Curb Ramps – Flares & Returned Curbs	9
C1	Parallel Curb Ramps – Landing Slopes & Sizes	10
C2	Parallel Curb Ramps – Ramp Cross Slopes & Widths	11
C2	Parallel Curb Ramps – Ramp Run Slopes & Lengths	12
D	Combination Curb Ramps.....	13
E	Blended Transitions.....	14
F1	Common Curb Ramp Elements – Surfaces & Grade Breaks	15
F2	Common Curb Ramp Elements – Detectable Warning Surfaces	16
F3	Common Curb Ramp Elements – Gutter Slopes	17
F4	Common Curb Ramp Elements – Clear Space & Alignment	18

Pictorial Illustration of Curb Ramp Elements



Perpendicular Curb Ramp



Parallel Curb Ramp

▶ Example of the Curb Ramp Measurement Form



Snohomish County Curb Ramp Measurement Form

(A) Background Information			
(A1) Ramp ID Number:		(A7) Ramp Road:	
(A2) MEF Number:		(A8) Adjacent Road:	
(A3) Name of Person Measuring:		(A9) Quadrant or Side of Road:	
(A4) Date Measurement Taken:		(A10) Number of Approaches:	
(A5) Ramp Configuration:		(A11) Traffic Control Type:	
(A6) Ramp Type:		(A12) Marked Crosswalk?	

(B) Perpendicular Ramps		(C) Parallel Ramps		(D) Combination Ramps				
(B1) Landing		(C1) Landing		(D1) Landing				
(B1.1) Run Slope (%):		(C1.1) Run Slope (%):		(D1.1) Run Slope (%):				
(B1.2) Cross Slope (%):		(C1.2) Cross Slope (%):		(D1.2) Cross Slope (%):				
(B1.3) Length (ft.):		(C1.3) Length (ft.):		(D1.3) Length (ft.):				
(B1.4) Width (ft.):		(C1.4) Width (ft.):		(D1.4) Width (ft.):				
(B2) Ramp		(C2) Ramps		(D2) Ramps				
(B2.1) Cross Slope (%):		(C2.1) Cross Slope (%):	Left	Right	(D2.1) Cross Slope (%):	Left	Center	Right
(B2.2) Width (ft.):		(C2.2) Width (ft.):			(D2.2) Width (ft.):			
(B2.3) Run Slope (%):		(C2.3) Run Slope (%):			(D2.3) Run Slope (%):			
(B2.4) Length (ft.):		(C2.4) Length (ft.):			(D2.4) Length (ft.):			
(B3) Flares & Returned Curbs								
(B3.1) P.C.P. Crosses the Ramp (Y/N)?								
(B3.2) Flares Present (Y/N)?								
(B3.3) Flare Slope (%):								
(B3.4) Returned Curbs Protected (Y/N/NA)?								

(E) Blended Transitions and End of Sidewalk Transition Ramps	
(E1) Narrowest Width Measured Perpendicular to the Direction of Travel (ft.):	
(E2) Steepest Slope Measured Parallel to the Direction of Travel (%):	
(E3) Steepest Cross Slope Measured Perpendicular to the Direction of Travel (%):	

(F) General Curb Ramp Elements					
(F1) Surfaces and Grade Breaks		(F2) Detectable Warning Surfaces		(F3) Gutter Counter Slopes	
(F1.1) Are all grade breaks flush (Y/N)?		(F2.1) DWS Present (Y/N/NA)?		(F3.1) Gutter Counter Slope (%):	
(F1.2) Obstructions / Utility Covers (Y/N)?		(F2.2) Adequate Visual Contrast (Y/N)?		(F3.2) Gutter Flow Line Slope (%):	
(F1.3) Vertical Discontinuities (in.)?		(F2.3) Extends Full Width of Facility (Y/N)?		(F4) Clear Space & Alignment	
(F1.4) Horizontal Gaps (in.)?		(F2.4) Both Front Corners Located at the Back of Curb (Y/N)?		(F4.1) Adequate Clear Space Beyond Face of Curb (Y/N/NA)?	
(F1.5) Grade Breaks Perp. to Slopes (Y/N)?		(F2.5) Distance of Front Corner Farthest from Back of Curb (in.)?		(F4.2) Curb Ramp Falls Within Crosswalk (Y/N/NA)?	
(F1.6) Planar Surfaces (Y/N)?		(F2.6) Length of DWS in the Direction of Travel (in.)?		(F4.3) Curb Ramp Located Outside of the Corner Radius (Y/N)?	
		(F2.7) Truncated Domes Aligned Perp. to Back of Curb (Y/N)?			

Comments / Notes: (such as ponding, legally parked cars can block, etc)

A Background Information

(A1) Ramp ID Number:	Unique numeric ID obtained from Program Planning.
(A2) MEF Number:	If MEF approval is required the MEF Number will be assigned by Program Planning upon approval of an MEF Application by the County Traffic Engineer.
(A3) Name of Person Measuring:	First and last name of the person measuring the ramp.
(A4) Date Measured:	MM/DD/YYYY
(A5) Ramp Configuration (Choose one of the options to the right that best fits the description of the ramp being measured)	<ul style="list-style-type: none"> a. Diagonal – Ramp at half delta often serves two crossings. b. Directional – Only ramp on quadrant/aligned with one crossing. c. Dual – Two ramps on quadrant/geometries are not linked. d. End-of-Sidewalk – Ramp where sidewalk gaps out. e. Missing Ramp – Legal crossing or end of sidewalk with no ramp. f. Paired – Two ramps on quadrant/geometries linked. g. Unknown – Ramp type is not known or yet to be evaluated.
(A6) Ramp Type: (Choose one of the options to the right that best fits the description of the ramp being measured)	<ul style="list-style-type: none"> a. Blended Transition – Sidewalk depressed through radius. No distinct ramp or landing. DWS oriented in radial pattern. 5% Run slope max. 2% cross slope max. b. Combination Ramp – A combination of parallel and perpendicular ramp elements. c. Median or Island – PAR traverses a median or island. d. Missing Ramp – Legal crossing or end of sidewalk with no ramp. e. Parallel Ramp – Ramps oriented parallel to the curb cut. f. Perpendicular Ramp – Ramp oriented perpendicular to curb cut. g. Transition Ramp – Ramps located where the sidewalk gaps out.
(A7) Ramp Road:	The name of the road containing the crossing that the ramp serves.
(A8) Adjacent Road: (Choose one of the options to the right that best fits the description of the ramp being measured)	<ul style="list-style-type: none"> a. Driveway – Ramp is located at a driveway. b. End of Cul-de-Sac – Ramp is located at the end of cul-de-sac. c. Midblock – Ramp at midblock crossing or sidewalk gap out. d. No Name – Roadway is not named or more research is required. e. Variable street name – The name of the road that is parallel to the crossing the ramp serves. f. Unknown – Cross road needs to be verified.
(A9) Quadrant or Side of Road:	Cardinal descriptor for intersection quadrant upon which the ramp is located, or for mid-block or End-of-Sidewalk ramps, the side of the road upon which the ramp is located, i.e. NW, NE, S, W, Etc.
(A10) Number of Approaches:	The number of legs/approaches to the intersection. For mid-block crossings, 2-leg intersections, End of Cul-de-Sac or End-of-Sidewalk ramps enter the number 2.
(A11) Traffic Control Type:	None, N/A, 1-Way Stop, 1-Way Yield, 2-Way Stop, All-Way Stop, Drop Curb Driveway, Curb Returned Driveway, Pedestrian Beacon Roundabout, Traffic Signal.
(A12) Marked Crosswalk (Y/N)?	Yes, No, N/A, Raised, or Unknown.

B1 Perpendicular Curb Ramps – Landing Slopes & Sizes



(B1.1) Take at least two measurements of the landing running slope as shown in the illustration to the top, left. Take one measurement on each side of the landing parallel to an extension of the sides of the curb ramp and perpendicular to the grade break at the top of the ramp (Location 1 & 2). If the landing does not appear to be planar take additional parallel measurements where the ramp appears to be warped. Record the steepest running slope measured.

(B1.2) Take at least two measurements of the landing cross slope as shown in the illustrations to the middle and bottom, left. Take one measurement parallel to the grade break where the ramp meets the landing (Location 3) and at a parallel location a minimum of four feet back from the grade break at the top of the curb ramp (Location 4). If the landing does not appear to be planar take additional parallel measurements where the ramp appears to be warped. Record the steepest cross slope measured.

(B1.3) Measure the landing length in the same locations as the landing running slopes measurements and record the shorter of the two dimensions.

(B1.4) Measure the landing width in the same locations as the cross slope measurements and record the narrower of the two dimensions.

B2 Perpendicular Curb Ramps – Ramp Cross Slopes & Widths



(B2.1) Take a minimum of three measurements of the ramp cross slope as shown in the illustrations to the left. Take measurements parallel to the grade breaks at the top and bottom of the ramp (Locations 1 & 2), and at least one parallel location in between (Location 3). If the ramp does not appear to be planar take additional parallel measurements where the ramp appears to be warped. Record the steepest cross slope measured.

(B2.2) Measure and record the curb ramp width at the narrowest point on the curb ramp parallel to the grade breaks at the top and bottom of the ramp.

NOTE: If the curb ramp has flared sides or returned curbs do not include them in the ramp cross slope or width measurements. Guidelines for measuring the flare slope can be found elsewhere in this document.

NOTE: Place the Digital Inclinometer between the rows of truncated domes when measuring over detectable warning surfaces.

B2 Perpendicular Curb Ramps – Ramp Run Slopes & Lengths



(B2.3) Take a minimum of three measurements of the ramp running slope as shown in the illustrations to the left. Take one measurement of the ramp running slope within six inches of each side of the ramp parallel to the ramp run (Locations 1 & 2) with at least one parallel measurement in between (Location 3). If the ramp does not appear to be planar take additional parallel measurements where the ramp appears to be warped. Record the steepest running slope measured.

(B2.4) Measure and record the curb ramp length at the center of the ramp perpendicular to the grade breaks at the top and bottom of the ramp.

NOTE: Place the Digital Inclinometer between the rows of truncated domes when measuring over detectable warning surfaces.

B3 Perpendicular Curb Ramps – Flares & Returned Curbs



(B3.1) Does the Pedestrian Circulation Path (P.C.P.) cross the curb ramp similar to what is shown in the illustration to the top, left (Yes or No)?

(B3.2) Does the curb ramp have flares or returned curbs (Yes or No)?

(B3.3) If the curb ramp has flares measure and record the flare slope by placing the digital inclinometer directly behind and parallel to the curb line as shown in the illustration to the middle, left.

(B3.4) If there is a returned curb is the ramp protected from cross travel by landscaping, or cane detectable street furniture, poles, or equipment that otherwise meet the requirements for protruding objects similar to what is shown in the landscape protected returned curb ramp illustrated to the bottom, left (Yes or No)?

C1 Parallel Curb Ramps – Landing Slopes & Sizes



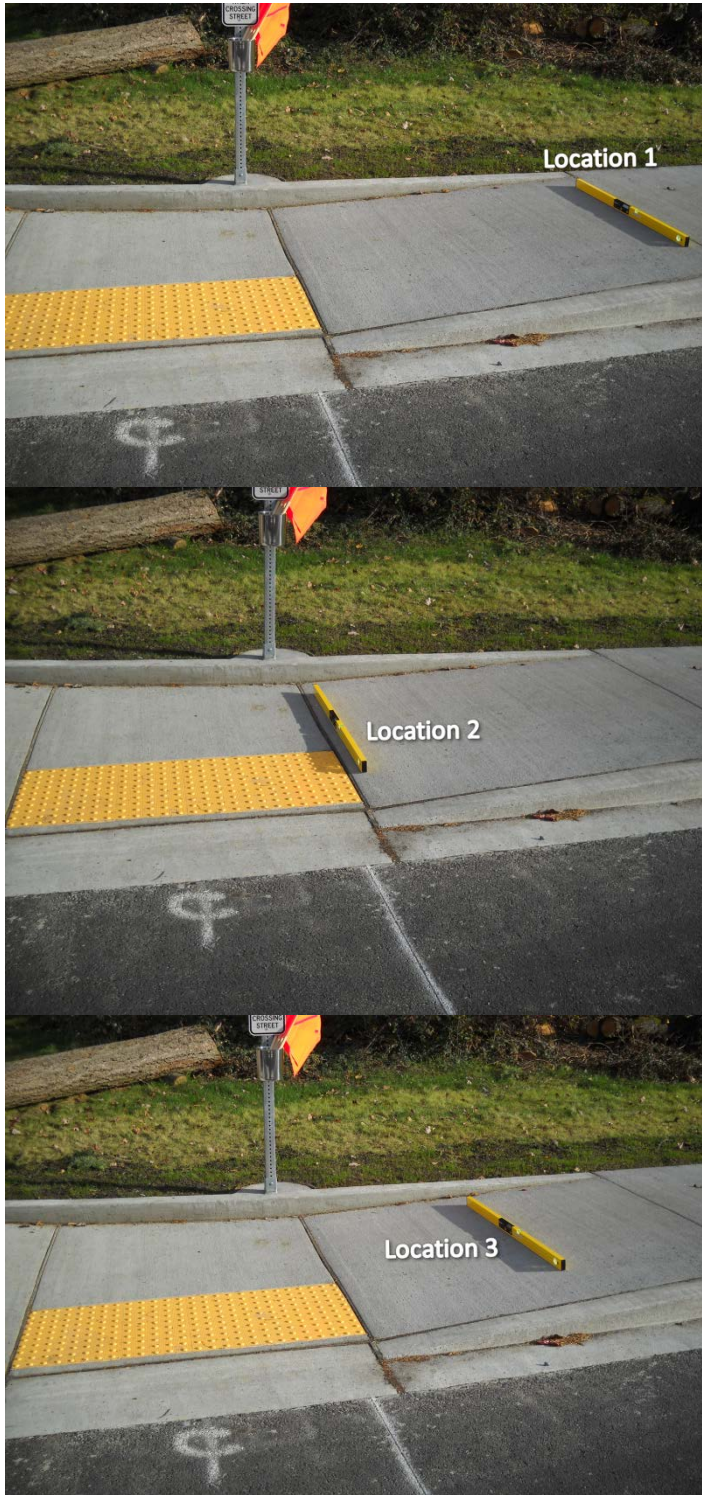
(C1.1) Take at least two measurements of the landing running slope as shown in the illustration to the top, left. Take one measurement on each side of the landing parallel to the grade break at the bottom of the curb ramp. (Location 1 & 2). If the landing does not appear to be planar take additional parallel measurements where the landing appears to be warped. Record the steepest running slope measured.

(C1.2) Take two measurements of the landing cross slope as shown in the illustrations to the middle and bottom, left. Take one measurement parallel to the back of the curb (Location 3) and one parallel measurement no less than 4 ft. from the back of the curb (Location 4). If the landing does not appear to be planar take additional parallel measurements where the landing appears to be warped. Record the steepest cross slope measured.

(C1.3) Measure the landing length in the same locations as the landing running slopes were measured. Record the shorter of the two measurements.

(C1.4) Measure the landing width in the same locations as the landing cross slopes were measured. Record the narrower of the two measurements.

C2 Parallel Curb Ramps – Ramp Cross Slopes & Widths



Parallel curb ramps often come in pairs and share a landing. If there are two ramps then the left ramp is to the left of the landing when facing the facility from the roadway. Measure both ramps.

(C2.1 Left & Right) Take a minimum of three measurements of the ramp cross slope as shown in the illustrations to the left. Take measurements parallel to the grade breaks at the top and bottom of the ramp (Locations 1 & 2), and at least one parallel location in between (Location 3). If the ramp does not appear to be planar take additional parallel measurements where the ramp appears to be warped. Record the steepest cross slope measured.

(C2.2 Left & Right) Measure and record the curb ramp width at the narrowest point on the curb ramp parallel to the grade breaks at the top and bottom of the ramp.

NOTE: Do not include curbs in the ramp cross slope or width measurements.

C2 Parallel Curb Ramps - Ramp Runs Slopes & Lengths



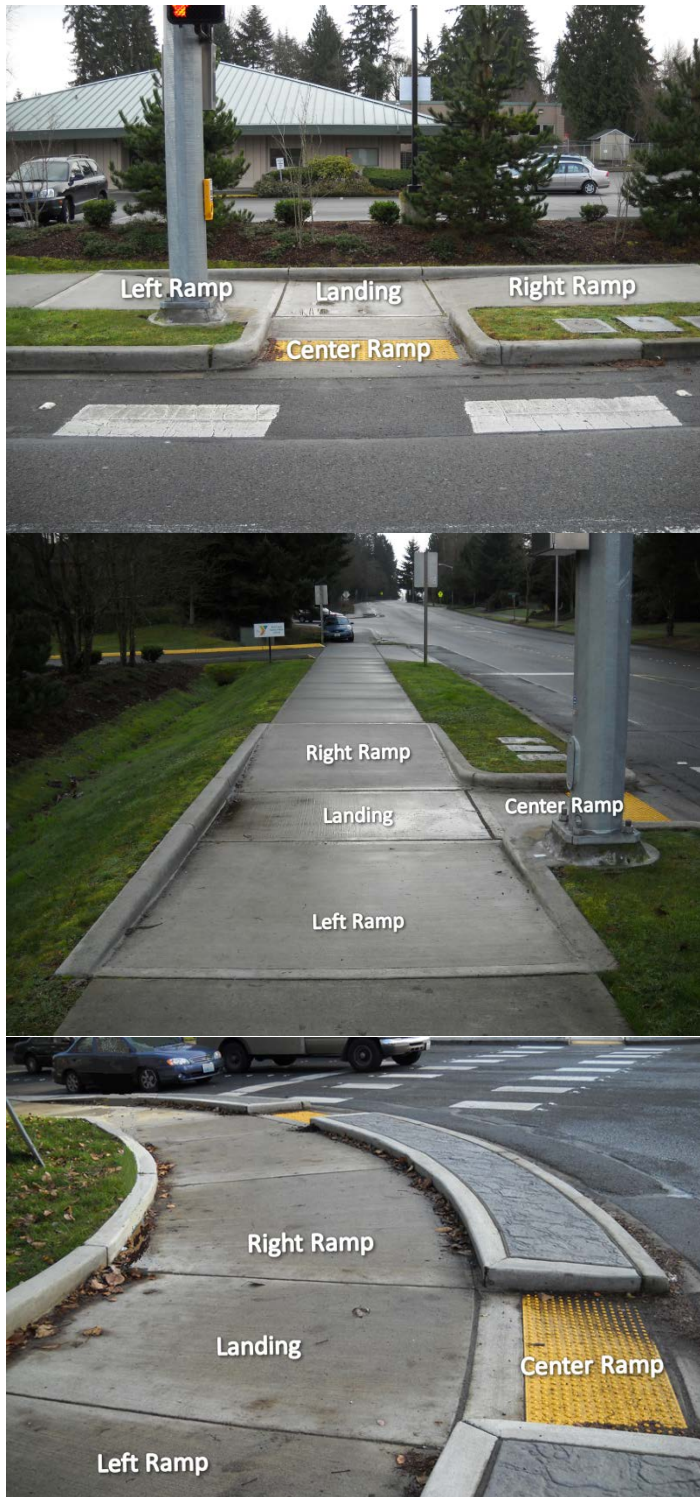
Parallel curb ramps often have ramps that come in pairs and share a landing. If there are two ramps then the left ramp is to the left of the landing when facing the facility from the roadway. Measure both ramps.

(C2.3 Left & Right) Take at least three measurements of the ramp running slope as shown in the illustrations to the left. Take one measurement of the ramp running slope within six inches of each side of the ramp parallel to the ramp run (Locations 1 & 2) with at least one parallel measurement in between (Location 3). If the ramp does not appear to be planar take additional parallel measurements where the ramp appears to be warped. Record the steepest running slope measured.

(C2.4 Left & Right) Measure and record the curb ramp length at the center of the ramp perpendicular to the grade breaks at the top and bottom of the ramp.



Combination Curb Ramps



Combination curb ramps combine the elements of two or more curb ramps – often from two different ramp types. For example, the illustrations to the left show a perpendicular ramp (Center Ramp) combined with two parallel ramps (Left Ramp and Right Ramp).

(D1) Measure the landing elements according to guidelines set forth in (D1)

Parallel Curb Ramps:

(D1.1) Run Slope (%)

(D1.2) Cross Slope (%)

(D1.3) Length (ft.)

(D1.4) Width (ft.)

(D2) Measure the left, right, and center ramps elements according to the guidelines set forth in (B2) Perpendicular Curb Ramp & (C2) Parallel Curb Ramps:

(D2.1) Cross Slope (%)

(D2.2) Width (ft.)

(D2.3) Run Slope (%)

(D2.4) Length (ft.)

E Blended Transitions



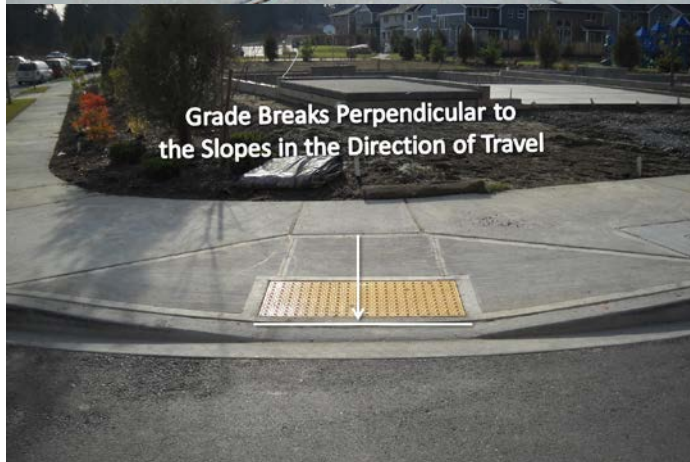
Blended transitions are raised pedestrian street crossings, depressed corners, or similar connections between pedestrian access routes at the level of the sidewalk and the level of the pedestrian street crossing that have a grades of 5 percent or less, and cross slopes up to 2 percent maximum.

(E1) Record the narrowest width found anywhere on the blended transition measured perpendicular to the direction of travel.

(E2) Record the steepest slope found anywhere on the blended transition measured parallel to the direction of travel.

(E3) Record the steepest cross slope found anywhere on the blended transition measured perpendicular to the direction of travel.

F1 Common Curb Ramp Elements - Surfaces & Grade Breaks



(F1.1) Are all grade breaks flush as shown in the illustration to the top, left (Yes or No)?

(F1.2) Are there utility, drainage or other appurtenances located on the ramp, landing, and/or in the gutter or crosswalk within the pedestrian access route (Yes or No)? If yes, note the type.

(F1.3) If there are vertical discontinuities on the surfaces or at the joints or grade breaks of the ramp, landing or gutter area measure and record the largest discontinuity to the nearest hundredth of a foot.

(F1.4) If there are horizontal gaps on the surfaces or at the joints or grade breaks of the ramp landing measure and record the widest gap to the nearest hundredth of a foot.

(F1.5) Are grade breaks perpendicular to slopes measured in the direction of travel as shown in the illustration to the bottom, left?

(F1.6) Are the surfaces of the ramps, landings and gutters areas planar (Yes or No)?

NOTE: Surfaces can generally be considered planar when all of the measured cross slopes on a surface are equal, and all of the measured running slopes on a surface are equal. If there are low spots greater than $\frac{1}{4}$ inch under a 4 ft. level then the surface will not be considered planar.

F2 Common Curb Ramp Elements - Detectable Warning Surfaces



(F2.1) Is a Detectable Warning Surface (DWS) installed on the facility being measured (Yes or No)?

If a DWS is present note the following:

(F2.2) Does the color of the DWS visually contrast with the surface upon which it is placed (Yes or No)?

(F2.3) Does the DWS extend the full width of the facility upon which it is placed, exclusive of flares and/or the curb width (Yes or No)?

(F2.4) Are both front corners of the DWS located at the back of the curb similar to what is shown in the illustrations to the top or middle, left (Yes or No)?

(F2.5) If only one front corner of the DWS is located at the back of the curb similar to what is shown in the illustration to the bottom, left, measure and record the distance from the back of the curb to the front corner of the DWS that is not located at the back of the curb.

(F2.6) Measure and record, to the nearest tenth of an inch, the length of the DWS in the direction of travel as shown in the illustration to the top, left.

(F2.7) Are the rows of truncated domes in the DWS aligned perpendicular to the back of curb (Yes or No)? The exception is for ramps like the one illustrated to the bottom, left which should have domes aligned perpendicular to the grade break.

F3 Common Curb Ramp Elements – Gutter Slopes



(F3.1) Measure and record the gutter counter slope by placing a digital inclinometer in the gutter pan at the face of the curb perpendicular to the curb ramp running slope at the center of the ramp or landing as shown in the illustration to the top, left.

NOTE: Sometimes the transition between the gutter and the pavement is not flush thereby making it impossible to lay a digital inclinometer that is longer than 6 (or 11) inches flat against the gutter pan. A square block may be placed under the digital inclinometer to provide a level surface. The non-flush grade break should be noted when evaluating (F1) Surfaces and Grade Breaks.

(F3.2) Measure and record the gutter flow line slope by placing a digital inclinometer in the gutter pan at the face of the curb parallel to the grade break at the bottom of the ramp as shown in the illustration to the middle, left.

F4 Common Curb Ramp Elements - Clear Space & Alignment



(F4.1) Is a 4 ft. by 4 ft. minimum clear space available beyond the curb face within the width of the crosswalk and wholly outside of the parallel vehicle travel lane similar to what is illustrated in the photo to the top or bottom, left (Yes or No)?

NOTE: For ramps, landings, or blended transitions wider than 4 ft. the clear space does not need to be provided along the entire width of the facility but there should be at a minimum a 4 ft. by 4 ft. clear space at a least one location along the face of the curb as illustrated in the photo to the bottom, left.

(F4.2) Is the curb ramp aligned to fall within the boundaries of crosswalks, marked or unmarked, so that pedestrians who have vision or mobility impairments are not directed outside the crosswalk or into a vehicle travel lane (Yes or No)?

(F4.3) Is the curb ramp located outside the corner radius (Yes or No)?